# WASHINGTON STATE
# DIVISION OF ALCOHOL AND SUBSTANCE ABUSE
# ONE-YEAR ADOLESCENT OUTCOMES
# REPORT

August, 1997

Prepared by:
New Standards, Inc.
St. Paul, MN

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# EXECUTIVE SUMMARY

This report presents findings on adolescents who received chemical dependency treatment from inpatient and outpatient facilities in the State of Washington and were contacted one year after treatment. In addition to chemical use status (in terms of abstinence and number of chemicals used) one year after treatment, certain changes in patient functioning and service utilization are evaluated. Several analyses compare pre-treatment and post-treatment patient status over the same time interval of one year. Inpatients represent about 70% of the overall one-year follow-up sample and are therefore the focus of the report.

Adolescents in the Division of Alcohol and Substance Abuse (DASA) sample were evaluated for their clinical profiles for addiction and other coexisting problems. The findings suggest a relatively impaired population with multiple addictions and other coexisting problems. The sample exhibits severity levels comparable to adult clinical populations. Among the highlights of the findings are the following:

Chemical Use: One-year abstinence rate was an important outcome measure, though supplemented with many other indicators of treatment impact.

- Two of every five (39%) of the inpatient adolescents in the one-year outcome sample reported full abstinence for at least the most recent six months prior to the 12-month follow-up contact point, including 22% who reported continuous (entire year) abstinence. Similarly, about two of every five outpatients (42%) have been abstinent for at least six of the most recent months prior to the 12-month follow-up contact, including 29% who have been abstinent the whole year.

- The number of substances used by adolescent inpatients dropped by more than half, from an average of nearly 5 in the year prior to treatment (4.9) to about two (2.2) in the year after, a dramatic decline that is clinically as well as statistically significant. Results on adolescent outpatients were similar (4.1 substances before vs. 1.8 after, treatment).

Level of Functioning: Improvements in adolescent functioning were indicated by declines in medical service utilization, school and work problems, psychiatric symptoms, and legal involvement, in the year after treatment, compared to the year prior.

- Among adolescent inpatients, rates of medical and psychiatric service utilization dropped significantly. For example, the percent of inpatient medical hospitalizations dropped after treatment, from 17% to 11%, the proportion of emergency room visits declined from 42% to 28%, and the rate of medical

outpatient visits for injuries decreased from 41% in the year before treatment, to 28% in the year after discharge. Outpatient findings were similar.

- Rates of psychiatric problems among adolescent inpatients dropped after treatment, not due to an increase in psychiatric care (whose levels, in fact, decreased after chemical dependency treatment): 42% of inpatients had enough symptoms clustered together to suggest the presence of a major depressive syndrome before treatment, vs. 29% after. Similarly, the extent of multiple self-injurious acts dropped, from 31% of inpatients in the year before treatment, to 11% the year after.

- Adolescents' functioning in school improved dramatically after treatment. Proportions of several school problems dropped by more than half, such as suspensions (70% of inpatients, pre-treatment vs. 26%, post-treatment), expulsions (37% and 9%, respectively) and being sent to the principal (81%, year before treatment, 29%, year after). Academic achievement increased correspondingly, as the percentage of inpatient adolescents receiving As increased from 13% to 34%, and receiving Fs decreased from 36% to 17% after treatment. Trends for adolescent outpatients were very similar.

- Both the proportions of inpatients with legal involvement as well as the average number of offenses per youth declined appreciably following treatment. The percentage of adolescents arrested for misdemeanors (56%) or felonies (41%) in the year before treatment decreased in the year after (31%, misdemeanors, 18%, felonies). Also, the proportion of substance-related infractions (possession/use) dropped from 34% to 10%. In addition, rates of overnight jail or detention (62% before vs. 39% after treatment) and placement in a juvenile correction facility (49%, year before, 30%, year after) showed reductions associated with treatment. Likewise, the average number of misdemeanor arrests per person declined from 2.39 in the year before treatment to .59, afterwards, a drop of three-fourths. The average number of felony arrests decreased by over two-thirds, from 1.14 to .31.

Predictors of Abstinence: Several variables were evaluated for their association with one-year abstinence rate, including school problems, involvement with the juvenile justice system, and level of addiction in relation to lengtrh of stay in treatment:

- Inpatients who were sober the entire year after treatment reported an overall lower rate of post-treatment school problems than those who relapsed. One-third (32%) of abstinent clients had any type of post-treatment school discipline problem, compared to under half (47%) of those who relapsed in the year after treatment. Pretreatment levels were not as discrepant (93% of abstinent inpatients, vs. 86% of relapsers). A similar pattern was found for adolescents who received outpatient treatment.

- Adolescents who achieved one full year of abstinence reported consistently lower rates of post-treatment legal involvement than clients who relapsed (see table 12), while pretreatment legal involvement was comparable. For example, abstinent adolescents were less likely to have any arrest (21%, vs. 42% of relapsers) or felony (10% abstinent vs. 20%, relapsed) arrest, in the year after treatment, while pretreatment rates were similar (61%, abstinent, vs. 67%, relapsed, for any pre-treatment arrest; 41% of abstinent vs. 42% of relapsed outpatients with any pre-treatment felony arrest).

- A shorter length of stay was prognostically favorable for lower intensity substance users: 45% of adolescents dependent on at most one substance were abstinent for one year after treatment, compared to 19% of clients diagnosed as dependent on two or three chemicals, and 15% of those dependent on four or more drugs. In contrast, extended lengths of inpatient treatment (over 30 days) were prognostically favorable for high intensity substance users: 38% of clients dependent on four or more substances had one full year of abstinence, vs. 29% of those with up to one substance dependency, and vs. 16% of adolescents diagnosed as dependent on two or three chemicals. In summary, these data support the contention that lower substance use severity is associated with favorable recovery rates when combined with shorter lengths of stay, while higher substance use severity is correlated with positive outcomes in conjunction with longer (over 30 days) lengths of inpatient treatment.

# INTRODUCTION

This report will focus primarily on outcome findings of adolescents who received chemical dependency treatment (from inpatient as well as outpatient settings) and provided outcome data typically at 3-, 6- and 12-month follow-up contact points after intake. In addition to recovery status in terms of complete abstinence in the year following treatment, other outcome indicators will be described. This study will present direct comparisons of status in the year prior to entering treatment against the year after, to assess the association of chemical dependency treatment with changes in school functioning, legal involvement and medical utilization among the adolescents studied. The relationship between varous treatment parameters and outcomes will also be explored.

The current study sample was drawn from an initial overall sample of 1,212 adolescents who were admitted to chemical dependency treatment facilities in the state of Washington between March, 1993 and December, 1995, and were eligible for 12-month post-discharge follow-up contact. Of this group, history information was provided by 1,163, and discharge data were available on 1,018. Follow-up contact was attempted whether or not the client completed treatment. At the first contact point, three months after treatment, 910 adolescents were contacted and provided outcome data; at six months after treatment, 792 clients were successfully contacted and gave outcome data; finally, at 12 months after treatment, 710 were contacted and yielded outcome information. Many of the factors studied involved variables addressing client status for the entire year after treatment; these required information from all three (3,6,12-month) contact points. For example, the number of hospital medical admissions in one year after treatment could not be computed unless provided by an adolescent who was successfully contacted at 3, 6, and 12 months after treatment. A total of 584 adolescents were contacted at all three follow-up points, which represents about half (48%) of the entire intial sample and 57% of the clients for whom discharge data were available. The extent of sample dropout or attrition, though not unexpected, is a reminder for readers to be very cautious in generalizing findings from the follow-up sample to the general population of adolescents entering chemical dependency treatment in the state of Washington.

Most analyses will be presented separately for inpatient and outpatient samples; however, this report will emphasize inpatient results, as the large majority (70+%) of the adolescents were treated in an inpatient setting. Table 1 in the Appendix describes the derivation of the inpatient and outpatient samples, from intake through 12-month follow-up contact. The sample size available varies according to the type of analysis; some findings, using data from successful 6- and 12-month follow-up contact, are based on possible maximum sample sizes of 422 inpatients and 155 outpatients. Other results, requiring successful follow-up contact at 3-, 6- and 12-month intervals, are based on maximum possible samples of 392 inpatients and 147 outpatients. Individual analyses may have smaller actual sample

sizes due to missing data. A small portion of the overall sample did not have the identifying data necessary to determine inpatient or outpatient status; these cases, which comprised about 1% of the total sample (n=18 at treatment entry, n=7 with 6- and 12-month outcomes), were excluded from the data analysis.

Table 2 shows basic demographic data on the adolescents comprising the one-year follow-up samples of inpatient and outpatient groups. Adolescents who received inpatient chemical dependency treatment tended to be male (63% vs. 37% female), under 17 years old (71%), enrolled in school at the time of treatment entry (56%), almost as likely to be living with one parent (39%) as with two (43%), and likely to report a yearly family income of under $20,000 (56%). Given that this was a study of publicly funded adolescent clients, it is not surprising that by far the most prevalent treatment payment resource was state funds (77% of adolescents) and that self-pay or parent payment was uncommon (11%).

The one-year follow-up sample of adolescent outpatients, in comparison, had a sharply higher percentage of adolescents currently in school (79%, vs. 56% of inpatients) when they entered treatment, a higher proportion living with both parents (52%, vs. 43% of inpatients), and a higher percentage of family incomes above $50,000 (40% of outpatients vs. 23% of inpatients). Consequently, rates of parent or self-payment for treatment were three times as high for the outpatient adolescents as for inpatients (33% vs. 11%, respectively), while reliance on state funds was less than half the rate for outpatients (31%) than inpatients (77%). These differences between the inpatient and outpatient follow-up samples suggest that adolescents entering inpatient facilities had somewhat less socioeconomic stability than those who receive outpatient treatment.

## TREATMENT OUTCOME: ABSTINENCE

Abstinence (defined as no chemical use at all) is the most universal outcome measure for addictions treatment in general. However, it is arguably an overly conservative or strict criterion by which to gauge the effectiveness of treatment when used as a solitary outcome measure. Therefore, in addition to one-year abstinence rates, this report will also present other outcome indicators, such as changes in number of chemicals used after treatment, plus changes in patient functioning and service utilization. As mentioned above, inpatient and outpatient findings are presented separately, though inpatient results (inpatients are about 70% of the total sample) are emphasized.

Overall Abstinence: One-year abstinence rates are derived from adolescents who were contacted at both 6- and 12-month follow-up contact points. Of the 561 inpatient adolescents who were contacted at the 6-month follow-up point, 36% reported full (6 months) abstinence. Of the 422 inpatients who were interviewed at

both 6- and 12-month follow-up points, 22% reported continuous (entire year) abstinence. An additional 17% acknowledged relapsing within the first six months after treatment, but then maintaining sobriety the entire second six months after treatment. Therefore, two of every five (39%) of the inpatient adolescents in the one-year outcome sample reported they have been abstinent for at least the most recent six months prior to the 12-month follow-up contact point (see Table 3).

The outpatient follow-up samples, though significantly smaller, still show a similar decrease in abstinence rates from six-month (44% abstinent) to one-year (29% abstinent) outcomes. Also, similar to the inpatient sample, when the proportion of adolescents who relapsed in the first six months after treatment (13%) is added to the percentage who have reported abstinence the whole year post-treatment (29%), it yields a figure of about two of every five outpatients (42%) who have been abstinent for at least six of the most recent months prior to the 12-month follow-up contact.

It is also instructive to examine outcomes according to the number of months in the first year after treatment in which the adolescent reports chemical use (see Table 4). Among adolescent inpatients, in addition to the 22% of clients who reported zero months of chemical use (full abstinence), one-fifth (20%) reported substance use in either one or two of the twelve months posttreatment (frequency of use was unavailable for assessment); these adolescents could be classified as having "mild lapses." "Moderate relapses" involve use of chemicals in three to six of the 12 months after treatment; over one-fourth (28%) of clients fall in this category. Finally, substance use in 7 to 12 months of the year after treatment can be considered "Serious to severe or prolonged relapses;" this applies to 31% of the follow-up inpatient sample. These results suggest that at least two-fifths of the adolescents who entered treatment (42%) had favorable chemical use outcomes (0-2 months use out of 12 possible months, after treatment), at least one-fourth (28%) had at best mixed findings (substance use in 3 to 6 of the 12 months), and under one-third (31%) had poor results (use in 7 to 12 months of the year after treatment). These outcomes could be considered encouraging in that they apply to *all* adolescents who entered inpatient treatment and were contacted at follow-up, regardless of duration, intensity, or completion of treatment.

Among adolescents who received outpatient treatment and were successfully contacted at follow-up, in addition to the 29% who reported complete abstinence for the year, 21% had a "mild lapse" (use in 1-2 months of the 12), 27% had moderate relapses (3-6 months substance use), and 22% had serious to severe relapses (use in 7-12 months of the year after treatment). Thus, half of the outpatients (50%) had "favorable" outcomes (0-2 months of chemical use), just over one-fourth (27%) had mixed findings, and just under one-fourth (22%) had poor results.

The biggest difference in extent of relapse between inpatients and outpatients was in the most severe category of "severe" relapses, where 15% of inpatients used

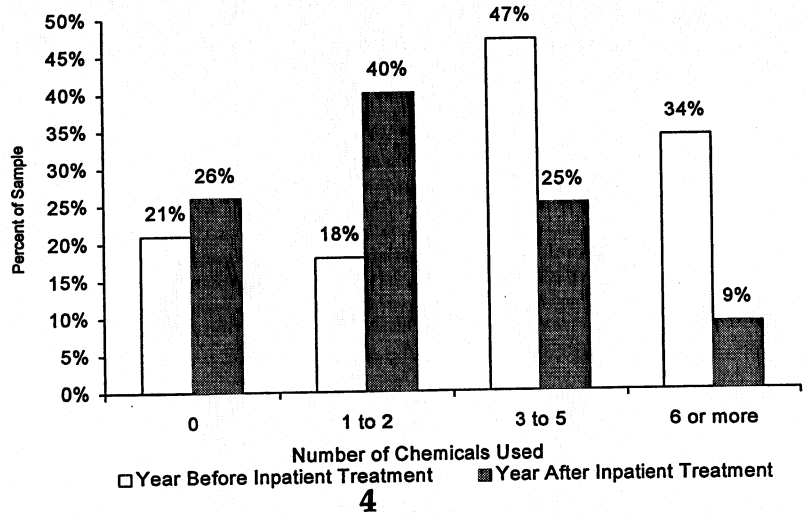
chemicals in at least 10 of the 12 months after treatment, compared to 8% of the outpatients. This difference may be a function of differences in patient severity between inpatients and outpatients:

Differences in Clinical Severity Between Inpatients vs. Outpatients: The difference in abstinence rates between adolescent inpatients and outpatients may reflect differences in patient severity rather than in program efficacy. Since inpatient treatment involves a higher and more restrictive level of care than outpatient, it should be associated with greater client severity, in terms of chemical use and co-occurring problems. Table 5 suggests that this is indeed the case. Adolescents who were treated on an inpatient basis had higher rates than outpatients of polydrug addiction (30% of inpatients received abuse or dependence diagnoses on four or more substances, vs. 23% of outpatients), greater symptom counts of alcohol, marijuana, and cocaine, greater familial chemical involvement, higher rates of childhood physical (37% of inpatients, 29% of outpatients) abuse, and higher rates of such psychiatric problems as depressive symptom clusters (44%, inpatients vs. 16%, outpatients), and incidents of self-mutilation (42% vs. 27%) or suicide attempts (20% vs. 8%) in the year before treatment. Finding differences in patient severity between inpatient and outpatient program types suggests that placement into either level of care is not an arbitrary or subjective decision, but takes clinical considerations into account.

Number of Chemicals Used: As suggested above, complete abstinence is only one indicator of treatment response, and it may underestimate the extent to which adolescents are progressing in their recovery pathways. The current one-year follow-up data indicate that even if total sobriety is not technically achieved by the clients, substance use patterns are changed after chemical dependency treatment (see Table 6 and Figure 1).

In the year prior to treatment, inpatient adolescents used an average of nearly 5 (4.9) different substances; in contrast, these same adolescents used an average of

**Figure 1. Number of Substances Used, Year Before vs. Year After Inpatient Treatment (n=552)**



about two chemicals (2.2) in the year after treatment, a dramatic decline that is clinically as well as statistically significant. Thus, the number of substances used dropped by more than half, in the year after treatment compared to the year before. As figure 1 graphically depicts, extreme polysubstance abuse (6 or more chemicals used) before treatment also showed the most extreme drop after treatment, from 34% of inpatients using 6 or more chemicals in the year before treatment, to only 9% using that many substances in the year after treatment.

Similarly, outpatient adolescents reported a statistically significant decrease in average number of substances used in the year after treatment (1.8) compared to the year before (4.1). Likewise, the prevalence of extreme polysubstance (6 or more substances) use dropped, from 28% to 5%, one year before vs. one year after treatment.

Providing a context against which to evaluate the above abstinence outcomes is a challenge, based on information gleaned from a large literature review of adolescent drug abuse treatment (Catalano, Hawkins, Wells & Miller, 1990-1991). In addition to numerous research studies using local populations, Catalano's comprehensive review described some results from two studies drawing from national samples of treatment programs. One, the Treatment Outcome Prospective Study (TOPS, Hubbard, et.al, 1985) analyzed outcomes of 240 adolescents from publicly funded inpatient and outpatient programs. Unfortunately, in the literature review, outcomes were not described strictly in terms of abstinence vs. relapse, but in terms of substance use frequency, so that TOPS outcomes are not directly comparable with this present study's. For example, it was reported that daily marijuana use for inpatients under the age of 17, who stayed in treatment three months or more, declined from 79.2% in the year before treatment, to 11.8% in the year after; conversely, daily marijuana use actually increased among adolescent outpatients, from 48% to 54%. Weekly use of drugs other than alcohol or marijuana decreased from 82% to 55%, for clients in treatment less than three months. A second national study, an analysis of the adolescent sample in the National Institute on Drug Abuse-Texas Christian University Drug Abuse Reporting Program (DARP), compared four treatment modalities in recovery status four to six years after treatment (Sells & Simpson, 1979). Unfortunately, instead of overall abstinence rates, results were reported separately for each drugs. For example, the percent abstinent from marijuana showed little change in adolescents from inpatient settings (34% abstinent before treatment to 33% abstinent afterwards) but more change from adolescents receiving outpatient treatment (30% abstinent before treatment, 34% after). A third, much smaller study cited in Catalano's literature review, actually involved marijuana dependent adults in a community-based treatment program (Roffman, et.al, 1988); it found that 30 percent of the clients reported complete abstinence from marijuana for the *month* following treatment. In this light, the one-*year* full abstinence rate from all substances of 22% (inpatient) and 29% (outpatient) for the current sample of Washington adolescents appears quite respectable.

The substance tobacco is not a direct focus of treatment, but has obvious health-related implications. Pretreatment use of tobacco was highly prevalent in the adolescent follow-up sample: 87% of inpatients and 80% of outpatients used tobacco, most (82% of inpatients, 69% of outpatients) on a daily basis. After treatment, tobacco use was only slightly, if at all, reduced: 84% of inpatient clients still used tobacco three months after treatment, 82% still used at six months after treatment, and 81% still used in the six months just prior to the 12-month follow-up contact point. Outpatient percentages were lower but still comparable: 70% used tobacco at 3-month follow-up, 76% at 6-month contact, and 71% at the one-year follow-up point.

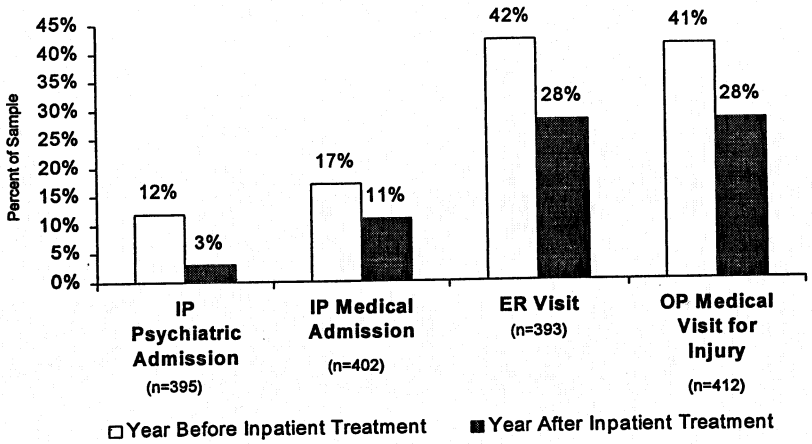
## OTHER OUTCOMES ASSOCIATED WITH TREATMENT

Abstinence and reduction in chemical use are narrow indicators of treatment effectiveness; CATOR analyses of adult chemical dependency treatment programs in the past decade have consistently documented dramatic reductions in work/school problems, medical utilization, and legal involvement after chemical dependency treatment, compared to the same length of time prior to entering treatment. Such reductions in the year after treatment arguably provide a "cost-offset" for treatment. For example, a study by the University of Chicago's National Opinion Research Center of 1,850 adults treated for drug abuse in the state of California in any of 83 programs concluded that every $1 spent on treatment saves taxpayers $7, primarily due to reductions in criminal activity and medical utilization (NIDA Notes, 1995). In that specific study, illegal activity declined by two-thirds, while medical utilization also dropped (for example, hospital emergency room admissions dropped by a third). Similar patterns of reduced medical utilization, legal involvement, and school problems are found in the current sample of Washington adolescents treated in inpatient and outpatient settings. All results here involve contrasts between functioning in the year prior to treatment against the year after treatment, using matched samples of clients (i.e., only those with valid data from *both* pre-treatment and post-treatment intervals).

Medical Utilization: The rates of inpatient adolescents reporting hospital admissions, whether for medical or psychiatric purposes, were reduced following chemical dependency treatment. Likewise, the prevalence of clients making emergency room (ER) visits also declined in the year after treatment (28%) compared to the year prior (42%). These trends are listed in table 7 and graphically depicted in figure 2. Table 7 also shows the extent to which the average number of hospitalizations per adolescent dropped after treatment. For example, inpatient adolescents had an average of .29 medical admissions per person the year before treatment, compared to .15 the year after, which represents a decline of about one-half. The average number of ER visits also dropped by about one-half (from 1.05 to

.50 per person) after treatment, compared to the same length of time prior. The mean number of psychiatric visits also showed a statistically significant reduction.

**Figure 2. Rates of Medical and Psychiatric Service Use for Adolescents who Received Inpatient CD Treatment**



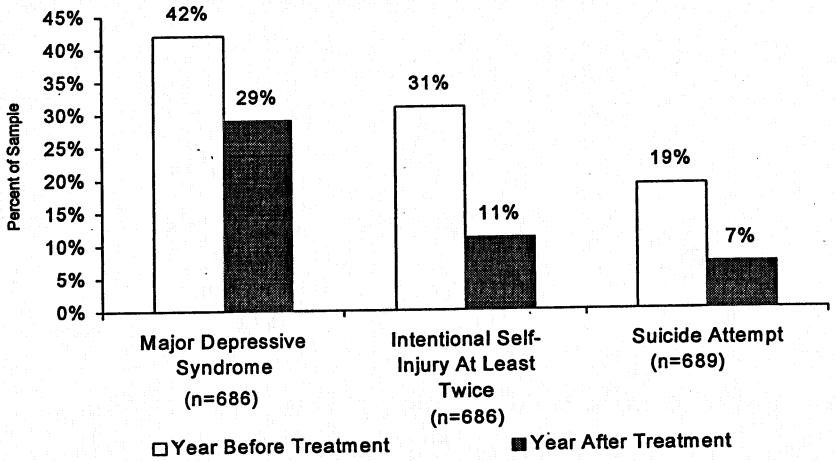

Similar to the decrease in inpatient medical utilization, outpatient visits, whether for injuries, illnesses, or psychiatric visits, all declined in a statistically significant fashion in the year after treatment, compared to the year before. This was true for both the proportion of adolescents (for example, 41% reporting a medical outpatient visit because of an injury before treatment vs. 28% of clients after treatment) as well as for the average number of outpatient visits per adolescent (e.g., the average number of medicaloutpatient visits because of an illness dropped from 2.62 to 1.65, a 37% decline).

Adolescents who received outpatient chemical dependency treatment tend to show a similar pattern of declining medical utilization after treatment (see Table 8). However, the trends are weaker and less likely to be statistically significant, in part due to the smaller sample size, as well as the initially lower rates of medical utilization to begin with. Nonetheless, the average number of ER visits among adolescent outpatients did significantly decrease, from .74 per person in the year before treatment, to .29 the year after, a decline of 60%

The post-treatment reductions in medical and psychiatric utilization are "real," substantial, robust (occurring over different types of hospital services - medical, psychiatric, and emergency room) , and they reflect a sizable "cost-offset" associated with treatment.

Psychiatric Symptoms: As noted above, among inpatient adolescents, the average number of psychiatric inpatient hospitalizations as well as outpatient visits decreased significantly the year after chemical dependency treatment, when compared to the year prior. Similarly, the extent of certain psychological or emotional concerns declined (see table 7). For example, in the year before treatment, over two-fifths (42%) of inpatient adolescents endorsed enough symptoms occurring together over a two-week period to indicate the presence of a major depressive episode. In the year after chemical dependency treatment, only 29% reported the presence of such a cluster of depressive symptoms. In addition, the percentage of adolescents admitting intentional self-injury (i.e., cuts, bruises, burns) at least on two occasions declined from 31% in the year before treatment, to 11% in the year after. Finally, the proportion of clients acknowledging an actual suicide attempt dropped, from 19% before, to 7% after, treatment (see Figure 3).

**Figure 3. Selected Psychiatric Symptoms, Before vs. After Inpatient CD Treatment**

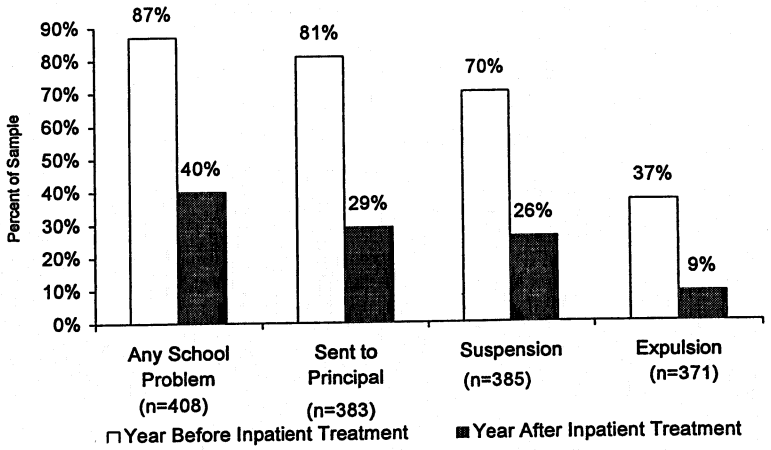



In this area, the "savings" can be construed in terms of gains in psychological and emotional well-being, not merely cost-offset dollars. Again, the benefits, though associated with chemical dependency treatment, cannot be said to be exclusively caused by it; however, the data reveal that the benefits cannot be attributed to successful *psychiatric* treatment, because the improvement in psychological symptoms was accompanied by a *reduction* in psychiatric service utilization after chemical dependency treatment, not an increase.

School Functioning: Adolescents with substance involvement are disproportionately involved in school behavior and discipline problems, when they are still attending classes. A subset of the Washington adolescent treatment sample was analyzed in terms of its school functioning; it consisted of 408 inpatients (under half of the adolescents who entered inpatient treatment) and 195 outpatients who had not

dropped out of school or graduated, in both the year before treatment and at anytime (either at 3, 6, or 12 month contact points) in the year after treatment (see tables 9, 10 and figure 4).

**Figure 4. Extent of Selected School Problems, Before vs. After Treatment, Among Adolescents who Received Inpatient CD Treatment**

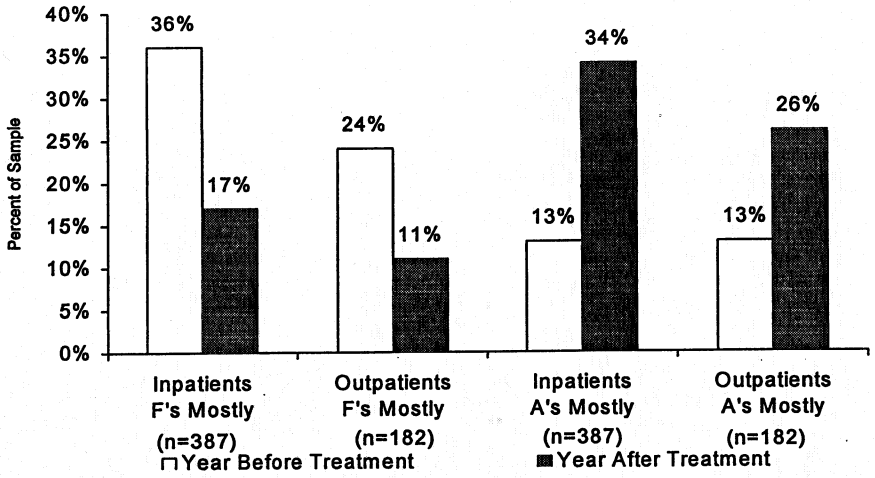



As the table and figure show, on numerous types of school discipline actions, the rates were appreciably lower for inpatients in the year after treatment, compared to the year before. For example, the percentage of adolescents sent to the principal dropped by well over half, from 81% in the year before treatment, to 29%, in the year after treatment. Likewise, rates of family conferences (58%, before, vs. 17%, after treatment) and school suspensions (70% vs. 26%) decreased, in association with chemical dependency treatment.

Adolescents who underwent outpatient chemical dependency treatment showed a highly similar pattern of reduction in school problems as inpatients (see Table 10), even though the extent of pretreatment school problems was slightly lower. For example, the rate of suspensions dropped from 64%, in the year before treatment, to 30%, the year after. Similarly, rates of being sent to the principal (71%, pre-treatment, vs. 35%, post-treatment), having family conferences (43% vs. 20%), being expelled (30% vs. 9%) and being placed on school probation (30% vs. 11%) all decreased substantially after treatment.

And, as shown in Figure 5 and Table 11, academic achievement improved, subsequent to chemical dependency treatment, as the proportion of students earning mostly F's dropped in half (e.g., 36% of inpatients, before, vs. 15%, after treatment), and the percentage earning A's rose correspondingly (13% vs. 34%). Similar results were obtained for outpatients as well.

## Figure 5. School Achievement, Before vs. After Treatment




In addition to documenting reductions in school discipline problems in the aftermath of chemical dependency treatment, the data also provide evidence of a mild relationship between post-treatment school functioning and adolescent abstinence (see table 12). Inpatients who were sober the entire year after treatment reported an overall lower rate of post-treatment school problems than those who relapsed. One-third (32%) of abstinent clients had any type of post-treatment school discipline problem, compared to under half (47%) of those who relapsed in the year after treatment. Pretreatment levels were not as discrepant (93% of abstinent inpatients, vs. 86% of relapsers).

A similar pattern was found for adolescents who received outpatient treatment (see table 13). While 59% of those patients who relapsed after treatment also had a school disciplinary problem after treatment, only 38% of abstinent adolescents had a post-treatment school problem. Pretreatment levels of school problems were quite similar for abstinent (78%) and relapsed (80%) adolescents.

Improvements in school functioning do not lend themselves to simple computation of immediate cost-offset figures as easily as changes in medical utilization. It can be seen, however, that school discipline problems require the use (and diversion) of school resources which could more profitably be focused on the promotion of learning. Improvements in academic functioning have more potential long-term "payoffs" in improving client work opportunities and standard of living which, in turn, provide societal benefits.

Legal Involvement: Any decreases in involvement with the juvenile justice system yield societal benefits, in an easing of demand on already overburdened legal and insurance systems. Legal fees, court costs, and auto insurance premiums can legitimately be factored into the "cost" of legal problems and should be factored into

the calculation of the "benefits" of lowering legal involvement in association with chemical dependency treatment. Adolescents who are involved in the juvenile justice system tend to be disproportionally represented in chemical dependency treatment. In the present study, one-third of the adolescents entering treatment (365 of 1,108) were court-referred, but an even larger percentage have had some type of prior contact with the juvenile justice system. More than half (52%) of the overall sample were on probation at the time of treatment intake, and the overall adolescent sample reported an average of 9.3 times in which they had past trouble with the law and an average of 5.9 arrests each. Being court-referred in and of itself was not a predictor of recovery status: 26% of court-referred adolescents reported one-year full abstinence, compared with 23% of non-court-referred clients, a non-significant difference.

Table 14 compares legal involvement in the year prior to inpatient chemical dependency treatment and the year after treatment. Both the proportions of inpatients with legal involvement as well as the average number of offenses per youth declined appreciably following treatment. The percentage of adolescents arrested for misdemeanors (56%) or felonies (41%) in the year before treatment decreased in the year after (31%, misdemeanors, 18%, felonies). Also, the proportion of substance-related infractions (possession/use) dropped from 34% to 10%. In addition, rates of overnight jail or detention (62% before vs. 39% after treatment) and placement in a juvenile correction facility (49%, year before, 30%, year after) showed reductions associated with treatment.

Likewise, the average number of misdemeanor arrests per person declined from 2.39 in the year before treatment to .59, afterwards, a drop of three-fourths. The average number of felony arrests decreased by over two-thirds, from 1.14 to .31. These results are graphically depicted in figure 6.

**Figure 6. Legal Involvement for Adolescents who Received Inpatient CD Treatment**

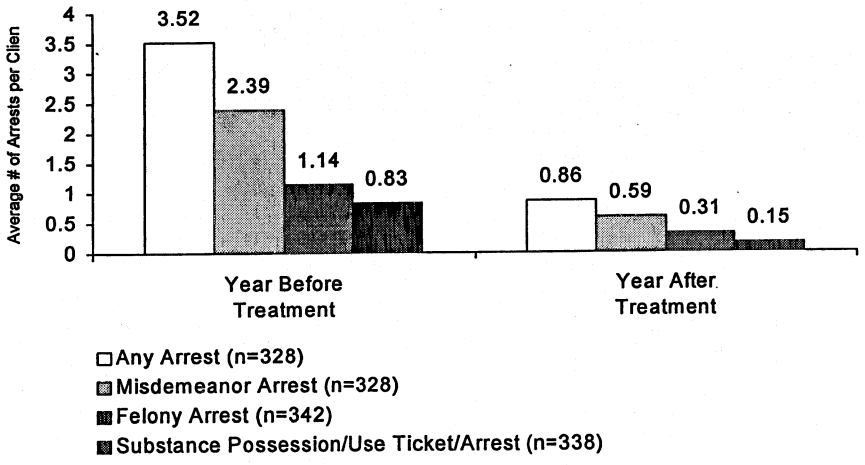


Table 15 shows changes in legal involvement for adolescents who received outpatient treatment. The pattern of results resembles inpatient findings. For example, adolescent outpatients report decreases in rates of misdemeanor arrests (47% before treatment to 27% afterwards), felony arrests (41% vs. 19%, respectively), and overnight detentions or jail placements (62% pre-treatment, 43% post-treatment). Likewise, there were statistically significant drops in the average number of misdemeanor, felony, and overall arrests per person one year after, compared to one year prior to, outpatient treatment.

Similar to school functioning, legal involvement after inpatient treatment was related to one-year abstinence. Adolescents who achieved one full year of abstinence reported consistently lower rates of post-treatment legal involvement than clients who relapsed, while pretreatment legal involvement was comparable. For example, abstinent adolescents were less likely to have any arrest (21%, vs. 42% of relapsers) or felony (10% abstinent vs. 20%, relapsed) arrest, in the year after treatment, while pretreatment rates were similar (61%, abstinent, vs. 67%, relapsed, for any pre-treatment arrest; 41% of abstinent vs. 42% of relapsed outpatients with any pre-treatment felony arrest).

Among adolescents who received outpatient treatment, abstinent outpatients tended to have differences in pre-treatment legal involvement compared to relapsed patients. For example, they have higher felony (70% vs. 54%), and misdemeanor arrest rates (55% vs. 41%), in the year before treatment. In contrast, post-treatment felony arrest rates were comparable (21% of abstinent adolescents vs. 17% of relapsers). A clear interpretation of results is complicated by the relatively small subsample sizes of both the abstinent outpatients (n=31) and relapsed outpatients (n=85). In any case, these data suggest that abstinent outpatients had greater reduction in arrests than outpatients who relapsed.

## PROGRAM FACTORS AND OUTCOME

The current one-year follow-up sample of adolescents is not homogenous, but comprises different program types, service levels, and specialty categories of placement. These can be examined for differential association with outcome. As mentioned above, one-year full abstinence is used as the basic outcome measure, even though it arguably under-represents the clients' recovery status. One must be careful not to overinterpret apparent disparities in outcome between program types since other factors, such as differential patient clinical and demographic features, may account for much of the discrepancy.

Mixed vs. Adolescent Only Facilities: A portion of the adolescents in the present outcome study attended chemical dependency treatment in facilities that house both adolescent and adult clients under one roof. Their outcomes can be compared to

those of clients from all-adolescent programs (see Table 16). As with the previous analyses, results are presented separately for inpatients and outpatients. As Table 16 indicates, only inpatient facilities have mixed adolescent and adult programs. The one-year abstinence rate for those inpatient adolescents in mixed facilities (32%) was actually higher than that for those in adolescent-only programs (20%). This finding is hard to interpret unambiguously, due to the relatively small number of adolescents in mixed programs (n=66, vs. n=331 for all-adolescent). Unfortunately, the small subsample size of 66 adolescents in mixed facilities prevents a meaningful comparison of their patient characteristics to those of inpatients in adolescent-only programs. A tentative conclusion from these figures would be that the adolescents who were placed in mixed facilities did not face any greater risk for relapse than the clients treated in the traditional manner, i.e, in adolescent-only programs. Whether this trend would hold in general cannot be extrapolated from the current data.

Only 99 out of 155 outpatients comprising the one-year follow-up sample had information on the type of program (adolescent-only vs. mixed). All indicated placement in an adolescent-only program, thereby not permitting any comparison to mixed-facility facilities to be made.

Coed vs. Gender-segregated: Programs can be categorized by whether their clients were coed or of one gender only. In the one-year follow-up sample, the majority (58%) of the adolescents were treated in coeducational programs, the remainder in gender-segregated facilities. Among inpatients, one-year outcomes were more favorable for those in the gender-segregated facilities (27% abstinent) compared to those in coed programs (17% abstinent).

The difference in one-year abstinence rates does not automatically mean that gender-segregated programs are more effective than coed ones. Further data analysis reveals that client gender interacted with the type of program in the association with outcome. When the coed and gender-segregated program outcomes are broken down separately by gender, the results indicate that while gender-segregated programs showed comparable outcomes for males (26% abstinent) and females (29% abstinent for one full year after treatment), coed programs showed a marked disadvantage for males (only 12% abstinent) compared to females (24% abstinent). In other words, the worst prognosis clients in the one-year follow-up sample were the adolescent males treated in coeducational inpatient programs, while females' outcomes did not vary appreciably by (coed vs. gender-segregated) setting. It is not clear what specific factors in this high-risk male group were responsible for the poor outcomes, but the findings do highlight the importance of carefully evaluating the merits of coed vs. gender-segregated programs in placement decisions, especially among adolescent males.

Outpatient adolescents had too few clients in gender-segregated programs (n=6) for meaningful comparisons to those in coeducational programs.

## TREATMENT PROCESS AND OUTCOME

Discharge Status and Length of Stay: Successful treatment completion is generally an important inital milestone on the path of recovery. As Table 16 indicates, adolescents (both inpatients and outpatients) who successfully completed treatment had appreciably higher one-year full abstinence rates (25% inpatients abstinent for one full year) than clients who withdrew or were discharged against medical advice or who left treatment because of rule violations (14% of inpatients abstinent, one year after treatment).

In adolescent residential(inpatient) chemical dependency treatment, the length of time in treatment can be evaluated for its relationship to treatment outcome. One literature review of research on adolescent treatment outcomes (Catalano, et.al., 1990-1991) concluded that length of time in treatment was linked to outcome, but weakly and not always in the expected direction; evidence for outpatient programs was more mixed than for inpatients. The ambiguous results are not surprising when one considers that length of stay can be confounded with factors such as patient severity of chemical use, co-occurring problems, and discharge status.

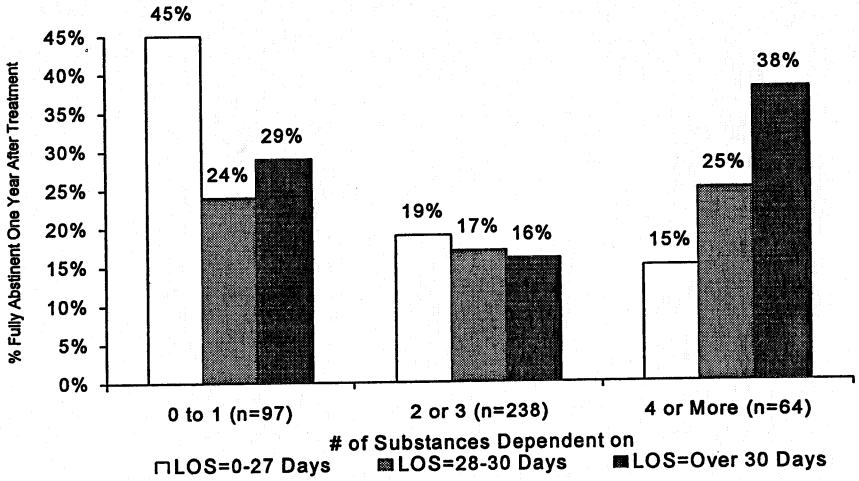
Among the adolescents in the present one-year follow-up sample, the average inpatient length of stay was 33 days; the median stay (the point at which half the sample had shorter stays and half had longer stays) was 30 days, and the most common (modal) length of stay was 28 days. Table 16 shows that, for the inpatient adolescents in the follow-up sample, one-year abstinence rates varied little, depending on length of stay. The abstinence rates of 27% for those who were in treatment up to two weeks, 21% for those who stayed 15-28 days, 20% for those in treatment between 29 and 35 days, and 19%, for clients whose length of stay exceeded 35 days, are not statistically significantly different from each other. Thus, evidence for a direct "dose-response" relationship between length of stay and treatment outcome was tenuous.

For the adolescents in the follow-up sample who received outpatient treatment, the findings are more tenuous, due to an appreciably smaller sample size (n=95). Clients who had up to 30 days of outpatient treatment had a one-year abstinence rate (30%) equivalent to the percentage for clients with 31 to 60 treatment days (30%), while those who received over 60 days of outpatient care had a somewhat lower abstinence rate of 18%. The last percentage should not be considered stable or reliable, as it is based on a subsample size of only 28 adolescent outpatients.

Substance Use and Length of Stay: In addition to interacting with discharge status, inpatient length of stay interacts with substance use severity in its association with treatment outcome. In this instance, substance use severity is approximated by the number of different substances for which adolescents receive a diagnosis of chemical dependence. Table 17 reveals that a shorter length of stay was prognostically

favorable for lower intensity substance users: 45% of adolescents dependent on at most one substance were abstinent for one year after treatment, compared to 19% of clients diagnosed as dependent on two or three chemicals, and 15% of those dependent on four or more drugs. In contrast, extended lengths of inpatient treatment (over 30 days) were prognostically favorable for high intensity substance users: 38% of clients dependent on four or more substances had one full year of abstinence, vs. 29% of those with up to one substance dependency, and vs. 16% of adolescents diagnosed as dependent on two or three chemicals. In summary, these data support the contention that lower substance use severity is associated with favorable recovery rates when combined with shorter lengths of stay, while higher substance use severity is correlated with positive outcomes in conjunction with longer (over 30 days) lengths of inpatient treatment (see figure 7).

**Figure 7. Abstinence by Length of Inpatient Stay and Number of Substances Dependent on**




The data showing an interaction between substance use severity and inpatient length of stay in predicting outcome also support the argument that uniform and standard lengths of treatment, sometimes pejoratively labeled the "cookie-cutter" approach, may constrain treatment effectiveness. It also makes intuitive sense that adolescents with less substance involvement may need a shorter "dosage" of treatment, while clients with heavier chemical use severity can truly profit from an extended treatment stay. If these findings are replicated with larger samples, they will provide strong evidence of the need for careful initial assessment and differential placement, and individualized treatment intensities (and, probably, service configurations).

Parental Involvement in Treatment: Logically, one indicator of adolescent engagement in the treatment process is parental involvement during treatment, especially if clients return to the parental home after treatment. The extent to which

parental involvement in treatment is associated, directly and indirectly, with adolescent recovery status can also be examined empirically. The results in Table 18 suggest that maternal participation in treatment was not a consistently powerful or direct predictor of adolescent abstinence, while paternal involvement was associated with outcome. Full participation by clients' mothers was not associated with higher one-year abstinence rates (23%) than non-involvement (24%). However, full participation by the father was correlated with higher adolescent abstinence rates (34%) than partial (20% abstinent for one year) or non-attendance (20% abstinent). Clients whose father's treatment involvement was coded as "Not Applicable," (due, presumably, to the father's non-presence in the family) had the worst outcomes (18% one-year abstinence rate)

Both parents' participation during inpatient treatment was associated with successful treatment completion, which, as shown earlier, is correlated with higher one-year abstinence. This finding holds for both mothers and fathers of the adolescents in inpatient treatment. For example, over three-fourths of the adolescents whose mothers participated fully in treatment (78%) successfully completed the program, compared to about half of the clients with only partial (56% treatment completion) or non-involvement (54%) by their mothers. Similarly, four-fifths (81%) of the adolescents with full paternal involvement completed treatment, compared to 78% of clients with partial involvement and 61% of those with no participation by their fathers (see table 18).

Finally, both maternal and paternal involvement in the adolescent's treatment seems to promote client engagement with a post-treatment continuum of care. For example, 56% of the adolescents whose fathers participated fully in treatment attended AA or NA support groups in the first three months after treatment, compared to 43% of the clients with partial paternal involvement, and half (50%) of those whose fathers did not participate at all. To a similar extent, this pattern of results was found for client attendance in program aftercare: one-fourth (25%) of adolescents with full father participation during treatment subsequently attended program aftercare at least twice weekly, in the first three months after treatment, compared to 18% of clients with partial involvement by their fathers, and 19% of those with no paternal treatment participation. Promotion of regular attendance in peer support groups and program aftercare are worthy goals: several prior CATOR analyses have consistently demonstrated that involvement in a post-treatment continuum of care is very strongly associated with favorable abstinence rates.

The results on parental involvement with treatment and adolescent status among outpatients are equivocal, in large part due to the small subsample sizes involved in the analyses, rendering several individual findings unstable. Nonetheless, these data are summarized in Table 19.

Client Satisfaction: In the present study, adolescents who underwent chemical dependency treatment were asked to provide client satisfaction ratings on various aspects of the treatment program. These data were collected at the three-month follow-up contact point, in part to avoid a "halo effect," or overly favorable ratings associated with the immediate completion of treatment. Results indicate that more than four of five (83%) inpatient adolescents were satisfied with their treatment, overall (Table 20). An even higher proportion (88%) of clients was satisfied with the opportunity to talk with other patients. At least three-fourths of inpatients were satisfied with the effectiveness of counseling in resolving their problems (78%), with individual counseling (75%), and with group counseling (80%). The lowest satisfaction ratings, which still can be considered high, were for school or tutoring services (69% satisfied), and for family counseling (69%).

Client satisfaction was weakly correlated with one-year abstinence. In general, adolescents who were satisfied had slightly higher abstinence rates than clients who were dissatisfied. For example, 25% of adolescents who were satisfied with the overall treatment were abstinent the entire year after treatment, compared to 12% of the dissatisfied clients. The largest disparities in outcome between satisfied and not satisfied adolescents were on ratings of individual counseling (28% of those satisfied abstinent the entire one year after treatment vs. 7% of the dissatisfied clients abstinent), and family counseling (31% of satisfied and 14% of dissatisfied adolescents reported abstinence). However, the most favorably rated treatment component, the opportunity for peer discussion (88% satisfaction level), was not at all associated with outcome: 22% of satisfied vs. 27% of dissatisfied adolescents were abstinent (see table 20).

Other inpatient ratings did correlate with outcome: the one-year abstinence rate among clients who believed the length of treatment was "About right" (28%) was higher than that for adolescents who thought the inpatient treatment was either too short (20% abstinent) or too long (15%).

Table 21 lists the ratings of treatment satisfaction among adolescent outpatient and their associated one-year abstinence rates. The results tend to resemble inpatient findings, but are somewhat less stable due to smaller subsample sizes.

## OTHER PREDICTORS OF OUTCOME

Post-treatment Continuum of Care: As mentioned above, CATOR analyses have shown that peer support group involvement and continuing care after discharge strongly predict outcome. Table 22 shows how various levels of peer support group attendance and program aftercare participation, assessed at both 6- and 12-month post-treatment follow-up contact points, are associated with one-year abstinence rates. For inpatient adolescents, peer support group involvement (i.e., AA) at six-

months post-treatment was strongly and directly predictive of one-year abstinence: one-third of regular attenders (33%) were abstinent the entire year, compared to 19% of irregular (weekly or less) and 15% of nonattenders. In contrast, regular aftercare attendance was associated with similar or worse abstinence rates as irregular involvement at both 6-month (26%, regular aftercare vs. 36%, irregular) and 12-month contact points (23% vs. 27%, respectively). On the other hand, completion of program aftercare, though an infrequent occurrence, was associated with high abstinence rates (42% of aftercare completers at 6-month contact, 52% of aftercare completers at 12-month contact).

The relationship between the continuum-of-care and outpatient treatment is harder to determine conclusively, because such a large proportion of outpatients reported either not participating or dropping out of support groups (e.g., 124 of 154, or 81%, at the 12-month follow-up) and program aftercare.

Another aspect of the continuum-of-care that is difficult to precisely evaluate is the extent to which inpatients and outpatients were part of the same continuum-of-care. That is, was a significant proportion of the outpatient sample not entering treatment as a primary episode but continuing treatment after an initial inpatient placement? According to the available data, 14 of 391 inpatients, or 4%, were listed as transfers out to different facilities as their discharge status. Among the 94 outpatients in the follow-up sample for whom data were available, only 8 were listed as referred from an "other CD treatment center" and 5 were referred from a "residential center." Therefore, it appears than most (at least 90%) of the outpatient sample entered outpatient treatment as a primary episode of care, rather than as a continuation of previous treatment.

PreTreatment Chemical Use: As described earlier, chemical use severity, as embodied in the number of substances an adolescent is dependent upon, interacts with length of stay in predicting recovery status. It also is independently correlated with outcome. Adolescents involved (dependence or abuse) with only one substance had higher one-year abstinence rates (41% of inpatients, 30% of outpatients) than clients involved with two or three (19% abstinent, inpatients, 25% abstinent, outpatients) or four chemicals and up (20%, inpatients and 23%, outpatients, abstinent), prior to treatment.

Differences in outcome according to type of substance used were less pronounced. For inpatients, the abstinence rates for adolescents dependent on marijuana (19%), alcohol (21%) or cocaine (21%) are very roughly comparable. One difficulty in interpreting these results is that clients can be dependent on more than one substance, so that the same individuals can be represented in more than one substance dependence category. The corresponding abstinence rates for outpatients are more discrepant (22% of alcohol dependent abstinent vs. 14% of marijuana and

14% of cocaine dependent), but some are untrustworthy, being derived on very small subsample sizes (e.g., n=7 outpatients dependent on cocaine).

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# Appendix: Tables

| Table 1. Sample Sizes | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Inpatient | | Outpatient | | Other | | Total |
| | n | % | n | % | n | % | n |
| Total Initial Sample | 842 | 70% | 352 | 29% | 18 | 1% | 1212 |
| With Intake Data Entry Date | 840 | 70% | 346 | 29% | 18 | 1% | 1204 |
| With History Data Entry Date | 814 | 70% | 333 | 29% | 16 | 1% | 1163 |
| With Discharge Data | 783 | 76% | 244 | 24% | 3 | <1% | 1030 |
| With Discharge Status | 773 | 76% | 242 | 24% | 3 | <1% | 1018 |
| With 3-Month outcome | 639 | 70% | 256 | 28% | 15 | 2% | 910 |
| With 6-Month Outcome | 561 | 71% | 220 | 28% | 11 | 1% | 792 |
| With 12-Month Outcome | 519 | 73% | 183 | 26% | 8 | 1% | 710 |
| With 6 & 12-Month Outcome | 422 | 72% | 155 | 26% | 7 | 1% | 584 |
| With 3, 6 & 12-Month Outcome | 392 | 72% | 147 | 27% | 7 | 1% | 546 |

| Table 2. Demographic Comparisons of Inpatients vs. Outpatients in One-Year Follow-Up Sample | | |
|---|---|---|
| | **Inpatient (n=392)** | **Outpatient (n=147)** |
| **Sex** | | |
| Male | 63% | 58% |
| Female | 37% | 42% |
| | | |
| **Ethnicity** | | |
| Caucasian | 74% | 69% |
| Hispanic | 9% | 8% |
| African-American | 3% | 13% |
| Native American | 10% | 2% |
| Asian | 3% | 4% |
| Biracial/ Other | 1% | 3% |
| | | |
| **Currently in School** | | |
| Yes | 56% | 79% |
| | | |
| **Age** | | |
| Under 15 | 23% | 30% |
| 15 | 25% | 21% |
| 16 | 23% | 24% |
| 17 | 20% | 26% |
| 18 or Older | 9% | 8% |
| | | |
| **Primary Living Situation** | | |
| With 2 Parents | 43% | 52% |
| With 1 Parent | 39% | 33% |
| With Relatives | 8% | 5% |
| Foster Care | 4% | 4% |
| Other | 6% | 6% |
| | | |
| **Family Income** | | |
| Under $10,000 | 30% | 19% |
| $10,001 - $20,000 | 26% | 12% |
| $20,001 - $50,000 | 20% | 30% |
| Over $50,000 | 23% | 40% |
| | | |
| **Medical Care Coverage*** | | |
| Medicare/ Medicaid | 28% | 35% |
| State Funds | 77% | 31% |
| Blue Cross/Blue Shield | 12% | 6% |
| HMO | 6% | 16% |
| Parents or Self-Pay | 11% | 33% |

*More than one response possible

| Table 3. Abstinence Rates | | | | | |
|---|---|---|---|---|---|
| | | Inpatients | | Outpatients | |
| | | n | % Abstinent | n | % Abstinent |
| Follow-Up Contact Point | Abstinence Interval | | | | |
| 3-Month | Past 3 Months | 639 | 54% | 256 | 48% |
| 6-Month | Past 6 Months | 561 | 36% | 220 | 44% |
| 12-Month | Most Recent 6 Months | 519 | 38% | 183 | 42% |
| 6 & 12-Month | Entire 12 Months | 422 | 22% | 155 | 29% |
| | | | | | |
| | | n | % of Sample | n | % of Sample |
| Overall Abstinence Pattern | | | | | |
| Abstinent Entire Year | | 91 | 22% | 45 | 29% |
| Relapsed 6 Months/ Abstinent 6 Months | | 73 | 17% | 20 | 13% |
| Abstinent 6 Months/Relapsed 6 Months | | 56 | 13% | 25 | 16% |
| Relapsed Entire Year | | 202 | 48% | 65 | 42% |

| Table 4.<br>Months of Chemical Use One Year after Treatment | | |
|---|---|---|
| **Months** | **Inpatients (n=422)** | **Outpatients (n=155)** |
| Zero | 22% | 29% |
| 1 or 2 ("mild lapse") | 20% | 21% |
| 3 - 6 ("moderate relapses") | 28% | 27% |
| 7 - 9 ("serious relapses") | 16% | 14% |
| 10 - 12 ("severe relapses") | 15% | 8% |

| Table 5. Inpatient vs. Outpatient: Client Differences | | | | |
|---|---|---|---|---|
| | Inpatient | | Outpatient | |
| | n | % | n | % |
| Abuse/Dependence for 4 or more substances | 372 | 30% | 94 | 23% |
| History of physical abuse | 378 | 37% | 141 | 29% |
| History of sexual abuse | 374 | 30% | 140 | 27% |
| History of family alcohol problems | 379 | 58% | 141 | 44% |
| History of Family drug problems | 376 | 50% | 140 | 39% |
| Major depressive syndrome | 375 | 44% | 140 | 16% |
| Self-mutilation, year before treatment | 375 | 42% | 139 | 27% |
| Suicide attempt, year before treatment | 377 | 20% | 141 | 8% |
| Most or all of friends use chemicals | 375 | 47% | 142 | 32% |
| | | | | |
| Average # of alcohol symptoms* | 377 | 9.7 | 142 | 6.8 |
| Average # of cocaine symptoms* | 364 | 2.6 | 138 | 1.3 |
| Average # of marijuana symptoms* | 377 | 8.8 | 142 | 6.2 |
| Average # of depressive symptoms* | 392 | 3.2 | 147 | 2.0 |

*Statistically significant difference in average # of symptoms, using t-test, at p< .001

| Table 6.<br>Number of Substances Used Year Before vs. Year After Treatment | | | | |
|---|---|---|---|---|
| | Inpatients (n=552) | | Outpatients (n=214) | |
| Number of Substances Used | Year Before Treatment | Year After Treatment | Year Before Treatment | Year After Treatment |
| 0 | <1% | 26% | 6% | 32% |
| 1 to 2 | 18% | 40% | 31% | 44% |
| 3 to 5 | 47% | 25% | 35% | 19% |
| 6 or More | 34% | 9% | 28% | 5% |
| **Average Number** | 4.9* | 2.2 | 4.1* | 1.8 |

* Difference in average number of substances pre- vs. Posttreatment is statistically significant, at p<.001, using paired sample t-test.

**Table 7.**
**Medical Utilization Before vs. After Treatment for Adolescents in Inpatient CD Treatment**

| | % of Clients | | Average # per Person | | Statistical Significance* |
|---|---|---|---|---|---|
| **Hospitalizations*** ** | | | | | |
| Medical (n=402) | 17% | 11% | .29 | .15 | .027 |
| Psychiatric (n=395) | 12% | 3% | .13 | .03 | .000 |
| Detox (n=395) | 8% | 3% | .09 | .07 | ns |
| E.R. Visit (n=393) | 42% | 28% | 1.05 | .50 | .000 |
| | | | | | |
| **Outpatient Visits**** | | | | | |
| For Illness (n=420) | 56% | 48% | 2.62 | 1.65 | .000 |
| For Injury (n=412) | 41% | 28% | 1.75 | .69 | .000 |
| Psychiatric (n=395) | 13% | 4% | 1.14 | .15 | .001 |
| | | | | | |
| **Psychiatric Problems*** ** | | | | | |
| Major Depressive Syndrome (n=686) | 42% | 29% | | | |
| Intentional Self-Injury at Least 2 Times (n=686) | 31% | 11% | | | |
| Suicide Attempt (n=689) | 19% | 7% | | | |

* Comparison of means using paired t-tests; ns = not statistically significant at p<.05.
** Based on successful patient contact at 6 and 12 months.
*** Based on <u>any</u> contact after treatment, either 3, 6 or 12-month follow-up.

**Table 8.**
**Medical Utilization Before vs. After Treatment for Adolescents in Outpatient CD Treatment**

| | % of Clients | | Average # per Person | | Statistical Significance* |
|---|---|---|---|---|---|
| **Hospitalizations*** ** | | | | | |
| Medical (n=102) | 12% | 8% | .15 | .10 | ns |
| Psychiatric (n=101) | 3% | 2% | .03 | .02 | ns |
| Detox (n=100) | 2% | 1% | .02 | .01 | ns |
| E.R. Visit (n=100) | 37% | 22% | .74 | .29 | .003 |
| | | | | | |
| **Outpatient Visits**** | | | | | |
| For Illness (n=157) | 54% | 45% | 1.97 | 1.86 | ns |
| For Injury (n=153) | 42% | 32% | 1.10 | .79 | ns |
| Psychiatric (n=103) | 7% | 5% | .57 | .52 | ns |
| | | | | | |
| **Psychiatric Problems*** ** | | | | | |
| Major Depressive Syndrome (n=263) | 20% | 16% | | | |
| Intentional Self-Injury at Least 2 Times (n=262) | 21% | 8% | | | |
| Suicide Attempt (n=264) | 8% | 5% | | | |

* Comparison of means using paired t-tests; ns = not statistically significant at p<.05.
** Based on successful patient contact at 6 and 12 months.
*** Based on any contact after treatment, either 3, 6 or 12-month follow-up.

| Table 9.<br>School Problems Before vs. After Inpatient Treatment | | |
|---|---|---|
| | **Year Before Treatment** | **Year After Treatment** |
| Sent to Principal (n=383) | 81% | 29% |
| Family Conference (n=381) | 58% | 17% |
| Suspension (n=385) | 70% | 26% |
| Expulsion (n=371) | 37% | 9% |
| School Probation (n=371) | 34% | 7% |
| Other (n=317) | 20% | 6% |
| Any School Discipline Problem (n=408) | 87% | 40% |

| Table 10.<br>School Problems Before vs. After Treatment Among Adolescents Who Received Outpatient CD Treatment | | |
|---|---|---|
| | **Year Before Treatment** | **Year After Treatment** |
| Sent to Principal (n=182) | 71% | 35% |
| Family Conference (n=178) | 43% | 20% |
| Suspension (n=178) | 64% | 30% |
| Expulsion (n=175) | 30% | 9% |
| School Probation (n=371) | 30% | 11% |
| Other (n=177) | 9% | 2% |
| Any School Discipline Problem (n=161) | 80% | 45% |

| Table 11.<br>School Achievement | | |
|---|---|---|
| | **Year Before Treatment** | **Year After Treatment** |
| **Grades Received** | | |
| **Mostly A's** | | |
| Inpatients (n=387) | 13% | 34% |
| Outpatients (n=182) | 13% | 26% |
| **Mostly F's** | | |
| Inpatients (n=387) | 36% | 17% |
| Outpatients (n=182) | 24% | 11% |

**Table 12.**
**School Problems Before and After Treatment: Abstinent vs. Relapsed Adolescents who Received Inpatient CD Treatment**

| | Abstinent Group (n=56) | | Relapsed Group (n=196) | |
|---|---|---|---|---|
| | Year Before | Year After | Year Before | Year After |
| Sent to Principal | 76% | 24% | 82% | 35% |
| Family Conference | 48% | 9% | 62% | 19% |
| Suspension | 59% | 27% | 71% | 33% |
| Expulsion | 30% | 6% | 37% | 11% |
| School Probation | 36% | 4% | 33% | 10% |
| Other | 25% | 7% | 19% | 7% |
| Any School Discipline Problem | 93% | 32% | 86% | 47% |

**Table 13.**
**School Problems Before and After Treatment: Abstinent vs. Relapsed Adolescents who Received Outpatient CD Treatment**

| | Abstinent Group (n=40) | | Relapsed Group (n=80) | |
|---|---|---|---|---|
| | Year Before | Year After | Year Before | Year After |
| Sent to Principal | 62% | 26% | 69% | 48% |
| Family Conference | 46% | 19% | 39% | 24% |
| Suspension | 60% | 29% | 66% | 36% |
| Expulsion | 30% | 3% | 28% | 11% |
| School Probation | 18% | 8% | 27% | 18% |
| Other | 3% | 6% | 12% | 2% |
| Any School Discipline Problem | 78% | 38% | 80% | 59% |

| Table 14.<br>Legal Involvement Before vs. After Inpatient Treatment | | | | | |
|---|---|---|---|---|---|
| | % of Clients Involved | | Average # per Person | | |
| | Year Before | Year After | Year Before | Year After | Statistical Significance |
| DUI Arrest (n=336) | 5% | 2% | .07 | .04 | ns |
| Physical Control of Vehicle (APC) (n=337) | 6% | 2% | .15 | .76 | .002 |
| Other Misdemeanor (n=341) | 54% | 31% | 2.29 | .57 | .000 |
| Any Misdemeanor (n=328) | 56% | 30% | 2.39 | .59 | .000 |
| Any Felony (n=342) | 41% | 18% | 1.14 | .31 | .000 |
| Any Arrest (n=328) | 65% | 37% | 3.52 | .86 | .000 |
| Substance Possession or Use Ticket/ Arrest (n=338) | 34% | 10% | .83 | .15 | .000 |
| Overnight Detention/ Jail (n=435) | 62% | 39% | | | |
| Juvenile Correctional Facility Placement (n=437) | 49% | 30% | | | |
| Either Overnight Detention or Correctional Placement (n=440) | 67% | 43% | | | |
| On Probation at Intake | 52% | | | | |
| Avg. # of Times in Trouble With the Law Before Treatment | 10.4 | | | | |
| Avg. # of Times Arrested Before Treatment | 6.4 | | | | |

| Table 15. Legal Involvement Before vs. After Outpatient Treatment | | | | | |
|---|---|---|---|---|---|
| | % of Clients Involved | | Average # per Person | | |
| | Year Before | Year After | Year Before | Year After | Statistical Significance |
| DUI Arrest (n=126) | 6% | 2% | .33 | .03 | ns |
| Physical Control of Vehicle (APC) (n=121) | 4% | 2% | .04 | .02 | ns |
| Other Misdemeanor (n=120) | 42% | 26% | 1.36 | .50 | .004 |
| Any Misdemeanor (n=116) | 47% | 27% | 1.77 | .53 | .001 |
| Any Felony (n=123) | 41% | 19% | .81 | .32 | .000 |
| Any Arrest (n=116) | 60% | 35% | 2.55 | .84 | .000 |
| Substance Possession or Use Ticket/ Arrest (n=126) | 19% | 6% | .27 | .12 | .053 |
| Overnight Detention/ Jail (n=144) | 62% | 43% | | | |
| Juvenile Correctional Facility Placement (n=144) | 44% | 34% | | | |
| Either Overnight Detention or Correctional Placement (n=144) | 66% | 46% | | | |
| On Probation at Intake | 52% | | | | |
| Avg. # of Times in Trouble With the Law Before Treatment | 6.9 | | | | |
| Avg. # of Times Arrested Before Treatment | 4.7 | | | | |

| Table 16. Program Factors and Abstinence Rates | | | | | |
|---|---|---|---|---|---|
| | Inpatients | | | Outpatients | |
| | n | % Abstinent | | n | % Abstinent |
| Adolescent Only | 331 | 20% | | 99 | 25% |
| Adolescent/ Adult Mixed | 66 | 32% | | 0 | - |
| CoEd: Total | 205 | 17% | | 66 | 24% |
| Females | 80 | 24% | | 27 | 30% |
| Males | 125 | 12% | | 39 | 20% |
| Gender-Segregated: Total | 192 | 27% | | 6 | 50% |
| Females | 63 | 29% | | 3 | 100% |
| Males | 129 | 26% | | 3 | 0% |
| Completed Treatment | 255 | 25% | | 27 | 41% |
| Client Withdrew/ AMA or Rule Violation | 119 | 14% | | 33 | 15% |
| Transfer, Inappropriate Admission or Other | 22 | 27% | | 40 | 22% |
| Inpatient LOS: 0-14 Days | 59 | 27% | Outpatient Days | | |
| 15-28 Days | 109 | 21% | 0-30 | 44 | 30% |
| 29-35 Days | 119 | 20% | 31-60 | 44 | 30% |
| >35 Days | 114 | 19% | >60 | 26 | 18% |

| Table 17.<br>Abstinence Rates Depending on Inpatient Length of Stay and Chemical Use Severity | | | |
|---|---|---|---|
| | Number of Substances Dependent On | | |
| | 0 or 1<br>(n=97) | 2 or 3<br>(n=238) | 4 or More<br>(n=64) |
| **Length of Inpatient Stay** | (One Year Abstinence Rates) | | |
| 0 to 27 Days | 45% | 19% | 15% |
| 28 to 30 Days | 24% | 17% | 25% |
| Over 30 Days | 29% | 16% | 38% |

**Table 18.**
**Adolescent Abstinence and Continuum-of-Care Involvement by Parental Participation in Inpatient Treatment**

| | 1 Yr. Abstinence Rate | | TxC* | | AA** | | Aft*** | |
|---|---|---|---|---|---|---|---|---|
| **Mother** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| None | 100 | 24% | 99 | 54% | 91 | 52% | 90 | 13% |
| Partial | 109 | 18% | 107 | 56% | 101 | 44% | 101 | 14% |
| Full | 164 | 23% | 161 | 78% | 156 | 50% | 156 | 26% |
| **Father** | | | | | | | | |
| None | 173 | 20% | 172 | 61% | 159 | 50% | 159 | 19% |
| Partial | 60 | 20% | 59 | 78% | 56 | 43% | 56 | 18% |
| Full | 58 | 34% | 57 | 81% | 57 | 56% | 57 | 25% |
| N/A | 101 | 18% | 97 | 57% | 95 | 46% | 94 | 18% |

* Percent of adolescents who completed treatment.
**Percent of adolescents attending AA/ NA at least twice a week the first 3 months after treatment.
***Percent of clients in aftercare at least twice a week in the first 3 months after treatment.

**Table 19.**
**Adolescent Abstinence and Continuum-of-Care Involvement by Parental Participation in Outpatient Treatment**

| | 1 Yr. Abstinence Rate | | TxC* | | AA** | | Aft*** | |
|---|---|---|---|---|---|---|---|---|
| **Mother** | **n** | **%** | **n** | **%** | **n** | **%** | **n** | **%** |
| None | 43 | 30% | 43 | 33% | 41 | 32% | 41 | 2% |
| Partial | 29 | 17% | 29 | 17% | 26 | 31% | 26 | 4% |
| Full | 18 | 22% | 18 | 28% | 27 | 29% | 16 | 6% |
| **Father** | | | | | | | | |
| None | 58 | 26% | 58 | 28% | 53 | 28% | 53 | 2% |
| Partial | 15 | 27% | 15 | 33% | 15 | 20% | 15 | - |
| Full | 3 | 0% | 3 | - | 3 | 100% | 3 | - |
| N/A | 15 | 27% | 15 | 27% | 14 | 36% | 13 | 8% |

* Percent of adolescents who completed treatment.
**Percent of adolescents attending AA/ NA at least twice a week the first 3 months after treatment.
***Percent of clients in aftercare at least twice a week in the first 3 months after treatment.

| Table 20.<br>Client Satisfaction With Inpatient Treatment and Abstinence | | | | |
|---|---|---|---|---|
| | Satisfied | | Not Satisfied | |
| **Client Satisfaction** | **%** | **% Abstinent** | **%** | **% Abstinent** |
| Overall Rating (n=354) | 83% | 25% | 17% | 12% |
| Effectiveness of Counseling (n=355) | 78% | 27% | 22% | 10% |
| Individual Counseling (n=337) | 75% | 28% | 25% | 7% |
| Group Counseling (n=352) | 80% | 25% | 20% | 17% |
| School/ Tutoring Services (n=293) | 69% | 22% | 31% | 20% |
| Family Counseling (n=245) | 69% | 31% | 31% | 14% |
| Opportunity to Talk With Other Clients (n=352) | 88% | 22% | 12% | 27% |
| **Satisfaction With Length of Treatment** | **n** | **%** | **% Abstinent** | |
| Too Short | 109 | 31% | 20% | |
| About Right | 193 | 54% | 28% | |
| Too Long | 53 | 15% | 15% | |

| Table 21.<br>Client Satisfaction With Outpatient Treatment and Abstinence | | | | |
|---|---|---|---|---|
| | Satisfied | | Not Satisfied | |
| **Client Satisfaction** | **%** | **% Abstinent** | **%** | **% Abstinent** |
| Overall Rating (n=354) | 80% | 29% | 20% | 32% |
| Effectiveness of Counseling (n=355) | 75% | 31% | 25% | 26% |
| Individual Counseling (n=337) | 79% | 32% | 21% | 16% |
| Group Counseling (n=352) | 72% | 30% | 28% | 24% |
| School/ Tutoring Services (n=293) | 68% | 42% | 32% | 24% |
| Family Counseling (n=245) | 66% | 33% | 34% | 30% |
| Opportunity to Talk With Other Clients (n=352) | 86% | 28% | 14% | 22% |
| **Satisfaction With Length of Treatment** | **n** | **%** | **% Abstinent** | |
| Too Short | 26 | 19% | 15% | |
| About Right | 74 | 54% | 35% | |
| Too Long | 36 | 26% | 28% | |

**Table 22.**
**Posttreatment Continuum-of-Care and One-Year Abstinence Rates**

| | Inpatients | | Outpatients | |
|---|---|---|---|---|
| | n | % Abstinent | n | % Abstinent |
| **AA at 6-Month Follow-Up** | | | | |
| Never/ Stopped Going | 182 | 15% | 94 | 31% |
| Once a Month to Weekly | 107 | 19% | 23 | 26% |
| 2 to 3 Times a Week | 133 | 33% | 38 | 26% |
| **AA at 12-Month Follow-Up** | | | | |
| Never/ Stopped Going | 250 | 18% | 124 | 30% |
| Once a Month to Weekly | 89 | 27% | 20 | 25% |
| 2 to 3 Times a Week | 80 | 26% | 10 | 20% |
| **Aftercare at 6-Month Follow-Up** | | | | |
| Never/ Stopped Going | 297 | 17% | 120 | 30% |
| Once a Month to Weekly | 61 | 36% | 18 | 22% |
| 2 to 3 Times a Week | 47 | 26% | 12 | 25% |
| Completed | 12 | 42% | 4 | 50% |
| **Aftercare at 12-Month Follow-Up** | | | | |
| Never/ Stopped Going | 352 | 19% | 124 | 29% |
| Once a Month to Weekly | 26 | 27% | 9 | 11% |
| 2 to 3 Times a Week | 13 | 23% | 6 | 17% |
| Completed | 29 | 52% | 14 | 43% |

| Table 23.<br>Pretreatment Chemical Use and Abstinence | | | | |
|---|---|---|---|---|
| | Inpatients | | Outpatients | |
| | n | 1 Yr. Abstinence Rate | n | 1 Yr. Abstinence Rate |
| **Number of Substances (Abuse or Dependence)** | | | | |
| 0 or 1 | 44 | 41% | 10 | 30% |
| 2 or 3 | 237 | 19% | 68 | 25% |
| 4 or More | 120 | 20% | 22 | 23% |
| **Substance of Dependence** | | | | |
| Alcohol | 325 | 21% | 69 | 22% |
| Marijuana | 320 | 19% | 72 | 14% |
| Cocaine | 48 | 21% | 7 | 14% |